Title: Changes of intracellular pH in yeast cells under stress conditions

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Abstract:

Specific values of intracellular pH (pHi) can affect all biochemical processes in a cell and this phenomenon is closely connected with the degree of importance of changes in the intracellular pH under the stress conditions. In the Master Thesis, the yeast cells Saccharomyces cerevisiae were used as a model of organism eukaryotic cells. Monitoring of intracellular pH of the cells was performed by the method of synchronous fluorescence scan technique of genetically encoded fluorescent probes pHluorin which was located in the cytosol of the cells. The cells were exposed to stress conditions due to the chemical changes in the environment. Consequently, their ability to maintain a stable value of the intracellular pH in various acidic environments was studied in more detail. The attention was also focused on the impact on optimizing of glucose cytosolic pH. The work was centered on the changes in intracellular pH under the influence of the presence of KCl in suspension. Furthermore, the decrease of cytosolic pH of monitored cells by protonophore CCCP was investigated. The effect of stress environment on the intracellular pH was studied in terms of variations of chemicals and their quantity in the cell suspension and also in terms of growth phase of researched cells.

Keywords: Saccharomyces cerevisce, intracellular pH, pHluorin, stress, fluorescence